

File WD34-
2001



State of Idaho

DEPARTMENT OF WATER RESOURCES

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DIRK KEMPTHORNE
Governor

KARL J. DREHER
Director

June 6, 2001

Mitchell Sorensen
Route 1, Box 63A
Moore ID 83255

RE: Flow Rate Measurements

Dear Mitch;

Enclosed is a copy of the Power Consumption Coefficient Worksheet used to record the information we obtained during the measurements of the flow rates and other data on May 23, 2001.

You asked if this information could be used to file Proof of Beneficial Use on the permit pertaining to this well. You also asked if the measurements could be used by David Shaw to make Certified Field Examination for licensing. I inquired with Tim Luke and he suggested I speak with Jeff Peppersack and/or Shelley Keen in our Water Rights Section.

I spoke with Jeff and Shelly and the answer is not clear but they suggested that if David Shaw had the information he may be able to use it but it most likely would be questioned since the Department made the measurements. He actually should make the measurements himself in order to certify. However, I suggest you call Jeff Peppersack to get it straight from him.

Concerning the question about using the measurements by the Department's field examiner. Again, according to Jeff, it would depend on how soon they got around to making it and if there were any changes in the system or water levels, etc. They suggested that I place the original worksheets etc. in the file for future reference and I have done this. You may want to discuss these issues with Jeff.

If you have questions concerning the data or calculations on the sheet, please call me at 208 327 5407. Jeff's phone number is 208 327 7940.

Burke H. Scholer, Hydrologist
Water Distribution Section

Memorandum

Date: June 6, 2001
To: Mitchell Sorensen
CC to: David Shaw
File ✓
From: Burke H. Scholer, Hydrologist
Subject: Water flow rate measurement
RE: Well located at T04N R26E Sec 05 NWSENE
Pole No. 44 Site Tag No. A0010026

On May 23, 2001 I conducted water measurements from the pump at the POD described above.

This well has a 150 HP well pump and a booster pump. The HP is not discernable on the nameplate of the booster but I believe it is 40 HP. Lost River Electric has this site listed as 190 connected HP. The water pumped from the well is distributed to two locations. One pipeline carries water from the well to a canal about ½ mile to the west. This is a 15" PVC pipeline, which open discharges into the canal. The other pipeline is pressurized from the booster pump and carries water to four, wheel-move laterals, irrigating approximately 120 acres of alfalfa. A shunt-line venturi meter is installed in the discharge pipe going to the 15" PVC pipeline.

Measurements were made using two flow meters. One was a Fuji, ultrasonic-transit time, meter mounted on the 15" PVC and the other was a Polysonic TF-P, ultrasonic-transit time, meter mounted on the 10 ¾" steel pipe. Concurrently with the flow rate measurements, readings were made from the venturi meter to determine the accuracy of it.

The first measurement was made with the well pump and the booster pump both operating. This is considered maximum flow and operating condition. Ten-minute average flow rates were recorded from each instrument. The second measurement was made with the booster pump off and the valve to the booster closed, so as to pump water through the PVC only. Power usage and pressure was recorded under both conditions.

Results of measurements:

Measurement #1: (Percent of seasonal use at this condition is approximately = 80%)

| | |
|----------------|--------------------------------|
| 15" PVC = | 2165.3 gpm (Going to canal) |
| 10 ¾ " Steel = | 865 gpm (Going to wheel-lines) |
| Total = | 3030.3 gpm |

Measured kW = 123.4
Measured Pressure = 20 psi
Calculated PCC = 221.16 kWh/ac.ft.
Calculated accuracy of Venturi meter = +6.38%

Measurement # 2: (Percent of seasonal use at this condition is approximately = 20%)

15" PVC = 2801.8 gpm (Going to Canal)

Booster Pump off

Total flow rate = 2801.8 gpm

Measured kW = 97.93

Measured Pressure = 24 psi

Calculated PCC = 189.83 kWh/ac.ft.

Calculated accuracy of Venturi meter = +6.56%

Calculated Weighted PCC = 225.65 kWh/ac.ft.

Pumping water level (depth to water in well) = 92 ft. (both measurements)

Estimated pumping plant efficiency at condition # 1 = 64%

Estimated pumping plant efficiency at condition # 2 = 79%

See attached: Power Consumption Coefficient worksheets for details